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Spaceport News

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www.nasa.gov/centers/kennedy/news/snews/spnews_toc.html

INSIDE . . .

STS-127 crew to put up porch

Although they will be installing a one-of-a-kind porch on the International Space Station, the astronauts of space shuttle Endeavour's STS-127 mission won't have time to sit back and relax.

The week leading up to Endeavour's launch from Kennedy Space Center's Launch Pad 39A at 7:17 a.m. EDT June 13 has been a busy one.

First, the STS-127 crew arrived at Kennedy's Shuttle Landing Facility from Houston in a Shuttle Training Aircraft Gulfstream II jet at 11:53 p.m. June 8.

"We are so ready to go . . . we just can't wait," Mission Specialist Tom Marshburn said.

Then there were four days of final preparations that included studying for the mission, medical exams, spacesuit fit checks, landing practices and adjusting their body clocks.

"We have to shift in a completely different time zone in order to sync up with the space station," said Julie Payette of the Canadian Space Agency.

Then there's the mission. It's scheduled to be 16 days long. That's not the longest mission a space shuttle has flown, but it's only the second time astronauts have gone into a mission planning to stay in space for that long.

With length comes complexity.

The shuttle crew – Commander Mark Polansky, Pilot Doug Hurley and Mission Specialists Christopher Cassidy, Marshburn, Dave Wolf, Payette and Tim Kopra, who will be trading places with station Flight Engineer Koichi Wakata of the Japan Aerospace Exploration Agency, or JAXA -- has a lot on its agenda.

NASA/Kim Shiflett

The STS-127 crew arrived at Kennedy Space Center late Monday night. From left are Mission Specialists Tim Kopra, Tom Marshburn, Christopher Cassidy, and Julie Payette of the Canadian Space Agency; Commander Mark Polansky; Pilot Doug Hurley; and Mission Specialist Dave Wolf.

"We're going to be challenged with five spacewalks coupled with complicated robotics using three different arms all at the same time," Polansky said.

The planned five spacewalks are not a first, but it's only the second time so many have been planned for a station mission.

Endeavour will arrive with a cargo bay full of work for the crew's four spacewalkers – orbital replacement units and new batteries for the station's oldest solar array. Some of their work will be waiting for them on the station's truss – cargo and payload attachment systems. But the main event will be the installation of the new Japanese hardware.

Four spacewalks and a great deal of the robotics work will devote some time to installing and outfitting the final pieces of JAXA's Kibo laboratory – its external facility, which will provide the Japanese a way to expose science experiments to the extreme environment of space, an exposed experiment logistics module for storage and some experiments to get it started.

"It's certainly really exciting for JAXA," Polansky said. "For them, this is the last of their hardware that's going to be permanently attached to the space station. This completes their series."

In fact, it's a banner flight for all the international partners, as all five space agencies – the United States, Russia, Canada, Japan and Europe – will have representatives at the space station when the shuttle arrives, in addition to the six extra Americans and one extra Canadian Endeavour will deliver. Polansky said just having all those nations represented and working together toward common goals is a huge accomplishment.

"We're excited that we'll have 13 people on board for the first time and all the major international partner space agencies represented at once," Polansky said. "It's a great reminder of all the men and women who work so tirelessly to prepare missions such as this."

Leaders share bright outlook over breakfast

By Linda Herridge
Spaceport News

"We have a very bright future," and "Kennedy Space Center will always be NASA's launch center," were Kennedy Center Director Bob Cabana's uplifting messages during the annual Community Leaders Breakfast at Kennedy's Visitor Complex on May 28.

Local, state and U.S. government representatives, as well as business, industry and community leaders received an update on the center's achievements, and current and future activities.

"Kennedy is very much a part of this community," Cabana said. "If we all work together I know we're going to get through this challenge that lies in front of us. We all need each other to be successful."

Cabana began the presentation by showing a special Apollo 40th Anniversary video and then gave a brief overview of Kennedy's accomplishments, and support of the space shuttle, International Space Station, Constellation and Launch Services Programs.

"We are a community, we are a family," Cabana said. "This is where we fly into space. It all started here."

Cabana commended the center's dedicated and talented work force, but said there will be a loss of 3,500 to 4,000 jobs at the end of the shuttle program.

NASA/Kim Shiflett

Rep. Ralph Poppell, R-Fla., left, talks with Kennedy Space Center Director Bob Cabana during the annual Community Leaders Breakfast in the Debus Conference Facility at Kennedy's Visitor Complex on May 28.

"We need to pull the Constellation work forward to help close that gap," Cabana said. "We need to look after this work force."

Currently, there are eight space shuttle missions remaining. The center's focus is to fly out the shuttle through 2010 and complete the International Space Station.

"We must fly safely," Cabana said. "At the same time we're continuing on the path for Constellation. We're pressing on with ground systems development."

He said the center's focus now will be to build on its heritage as it moves into the future.

"The last mission was a phenomenal success. No robots could have done what the astronauts did to upgrade Hubble during the STS-125 mission," Cabana said.

Cabana gave an update on the Constellation Program's Ares I-X flight test preparations, the three new lightning towers at Launch Pad 39B, modifications to Mobile Launcher Platform-1 and the world-class Orion processing facility in the Operations and Checkout Building.

"If we all work together I know we're going to get through this challenge that lies in front of us. We all need each other to be successful."

Bob Cabana, Kennedy Space Center director

He said Ares I-X flight test segments are being prepared for launch in Kennedy's Vehicle Assembly Building and Assembly and Refurbishment Facility.

"It's hard to see this now, but we're going to have a heavy-lift vehicle that will take us back to the moon," Cabana said, referring to the Ares V and Altair lunar lander.

He said NASA's Launch Services Program has had one of its busiest years with several expendable launch vehicle launches.

Preparations are ongoing for the launch of the Lunar Reconnaissance Orbiter, or LRO, and Lunar Crater Observation and Sensing Satellite, or LCROSS, which are the first missions to go back to the moon.

"We are a leader in space exploration," Cabana concluded. "We want to maintain our leadership in the world."

NASA/Kim Shiflett

Hundreds of community leaders, business executives, educators, community organizers, and state and local government officials attended the annual Kennedy Space Center Community Leaders Breakfast in the Debus Conference Facility at Kennedy's Visitor Complex on May 28.

FPL, NASA celebrate new power source for KSC

By Linda Herridge
Spaceport News

Kennedy Space Center and Florida's largest utility provider started breaking ground this month on a 10-megawatt, photovoltaic solar power facility on 60 acres of the center.

NASA officials, VIPs, news media and elected officials kicked off the green effort at a ceremony May 27 at the Kennedy Space Center Visitor Complex.

Under an agreement signed by NASA and Florida Power & Light in June 2008, the Space Coast Next Generation Solar Energy Center will support the electrical needs of the center and help reduce reliance on fossil fuels.

Speakers during the ceremony were Kennedy Center Director Bob Cabana, FPL President and Chief Executive Officer Armando Olivera, U.S. Sen. Bill Nelson, D-Fla., and U.S. Reps. Suzanne Kosmas, D-Fla., and Bill Posey, R-Fla.

"The partnership between NASA and FPL is an excellent one that comes at the right time," said Cabana. "It will help provide clean, renewable power to Florida residents, it will help support America's space program by supplying electricity directly to Kennedy Space Center, and it helps to reduce our reliance on fossil fuels and improves the environment."

FPL will build and maintain two solar photovoltaic power generation systems at Kennedy. One will produce an estimated 10 megawatts of emissions-free power for FPL customers, which is enough energy to serve about 1,100 homes.

NASA/Kim Shiflett

An aerial view of State Road 3 on Kennedy Space Center where a solar power system will be built by Florida Power & Light. As part of a public-private partnership to promote a clean-energy future, this system will produce an estimated 10 megawatts of emissions-free power for FPL customers, which is enough energy to serve about 1,100 homes.

The second is a one-megawatt solar power facility that will provide renewable energy directly to Kennedy and help NASA meet its goal for use of power generated from renewable energy.

"Like NASA, FPL is looking beyond the horizon," Olivera said. "We are building more emissions-free solar power with the quality of life of our children and grandchildren in mind."

The FPL facilities at NASA will help provide Florida residents and America's space program with new sources of clean energy that will cut reliance on fossil fuels and improve the environment by reducing greenhouse gas emissions by more than 227,000 tons during a period of 30 years.

According to the U.S. Environmental Protection Agency, that's the equivalent of removing 1,800 cars from the road every year for the entire life of the project. It also will save about 122,000 barrels of oil and 2.8 billion cubic feet of natural gas during its lifetime.

"There's no better time than right now to start using the sun and other clean sources to power America," Nelson said. "And, perhaps, there's no better agency to help lead the way than NASA. Let's hope power companies all over the country take a cue from this partnership."

The system is expected to generate about 1.7 million kilowatt-hours of electricity per year, which translates to a reduction of almost 1,300 tons of carbon dioxide, nearly four tons of sulfur dioxide and two tons of nitrogen oxide.

"Florida is poised to be a leader in America's growing clean energy economy, which naturally includes solar power," Kosmas said.

Posey said he too has a strong commitment to renewable energy.

"I am pleased to see this project going forward right here on the Space Coast," Posey said. "This is an important step in the development of future sources of renewable energy."

Kennedy's previously largest solar power system was installed at the center's landfill in 2005. The five-kilowatt, solar photovoltaic system provides electrical power to one of two buildings previously powered by diesel generators, saving the government about $26,000 per year, and eliminating the safety and environmental hazards associated with generators.

In 2003, Kennedy installed a solar thermal system at the Film Storage Building and a one-kilowatt array was installed to provide electrical power to a lightning detection device in 2004. Solar powered parking lot lights are in use at the Life Support Facility built in 2008.

The center reduced its electricity consumption from 266,200 megawatt-hours in 2003 to 249,700 megawatt-hours in 2008.

NASA/Kim Shiflett

An aerial view of the Industrial Area of Kennedy Space Center where a solar power system will be built by Florida Power & Light. This system will be a one-megawatt solar power facility that will provide renewable energy directly to Kennedy.

Courtesy of FPL

This is a rendering of the proposed solar power system that Florida Power & Light is beginning to construct in the Industrial Area of Kennedy Space Center. This one-megawatt facility will help NASA meet its goal for use of power generated from renewable energy.

Scenes Around Kennedy Space Center

NASA/Jim Grossmann

In Kennedy Space Center's Space Station Processing Facility, an overhead crane lowers the Tranquility module, or Node 3, toward a work stand. The module will be delivered to the International Space Station on the STS-130 mission. Tranquility eventually will house the life support equipment necessary for the space station's permanent crew of six. It also will accommodate the Cupola observation module, a seven-window, dome-shaped structure. Tranquility is targeted for launch aboard space shuttle Endeavour in February 2010.

NASA Employees of the Month: June

NASA/ Tom Farrar

Employees of the month for June are, from left: Akash Vangani, Launch Services Program; Todd Campbell, Launch Vehicle Processing Directorate; Raymond Norman, Center Operations; Lourdes Cotto, Chief Financial Office; Martin Boyd, Engineering Directorate; and Michael Miller, Constellation Project Office. Not pictured are: Tony Killiri, Information Technology and Communication Services; Josephine Santiago-Bond, Engineering Directorate; and Suzanne Dininny, Safety and Mission Assurance Directorate.

Photo courtesy of Tony Gannon/SPACE FLORIDA

Academy students, from left, Kimberley Koehler (University of Central Florida), Aline Seekins (Florida Tech), Brenton Thompson (Embry-Riddle Aeronautical University), Bob Eppig (Florida Space Grant Consortium engineer), and Andrew Vieves (Embry-Riddle Aeronautical University) make final preparations to their scientific payload during a recent launch countdown at Kennedy Space Center.

NASA/ Tony Gray

Kennedy Space Center Director Bob Cabana, Deputy Director Janet Petro and Mark Jager, program manager for CAPPS/Boeing, honor several Executive Safety Award winners at Kennedy Headquarters on May 28. From left, are Petro, Ronald Davis, Edgar Jarrell, Richard Hulse, Melvin Edmonds, Jager and Cabana. Not shown are Thomas Ferruzza, Jack Legere, Gregory Hakanson, Richard Lawson and John Carden.

NASA/Jim Grossmann

Workers secure the conjoined Ares I-X forward and center segments of the fifth segment simulator to the simulator's aft segment in the transfer aisle of the Vehicle Assembly Building at Kennedy Space Center. Ares I-X is the test vehicle for Ares I, a component of the Constellation Program to return humans to the moon and beyond. Launch of the Ares I-X flight test is targeted for August 2009.

NASA/Jim Grossmann

Workers check the "beanie cap" and the gaseous oxygen vent arm removed from the fixed service structure at Kennedy Space Center's Launch Pad 39B. A portion of the service structure is being removed for the pad's conversion as launch site for the Constellation Program's Ares I-X flight test.

When rain pours and thunder roars, go indoors

A week-long storm system recently hovered over the Space Coast, producing high winds, piercing thunder, record rainfall and dangerous lightning. The system, which kicked off Florida's lightning season a little early, even inhibited landing attempts by space shuttle Atlantis and its STS-125 crew at Kennedy Space Center.

Central Florida, known as "Lightning Alley," receives more lightning strikes than anywhere else in the United States. Lightning is responsible for more weather-related deaths in Florida than nearly all other weather hazards combined. It also inflicts lifelong, debilitating injuries. Lightning season will continue through late September, so now is the time to be lightning safe.

Remember that no place outside is safe with thunderstorms in the area. While on Kennedy or Cape Canaveral Air Force Station property, listen for the following lightning advisories:

Phase-I lightning watch -- issued up to 30 minutes before lightning is expected to occur within six miles of the specified location. This means lightning is close enough to be a reasonable threat.

Phase-II lightning warning -- issued when lightning is imminent or occurring within six miles of the specified location.

Follow approved local procedures when you hear lightning advisories. If you don't have approved local procedures, develop them. Until then, use the following guidelines:

If you're working outdoors near proper shelter and a Phase-I lightning watch is issued, finish vital activities quickly and go inside. If you are not near proper shelter, stop activities immediately and go to proper shelter. Proper shelter is considered a large, fully enclosed building with wiring and plumbing, or a vehicle with a solid-metal roof and solid-metal sides.

If you're working outdoors and a Phase-II lightning warning is issued, you are in danger -- go inside immediately. If indoors and a watch or warning is issued, stay inside until the advisory is canceled.

While off property, continue to practice lightning safety. Two excellent slogans are, "When thunder roars, go indoors!" and "Half-an-hour since thunder roars, now OK to go outdoors!"

Follow the four levels of lightning safety:

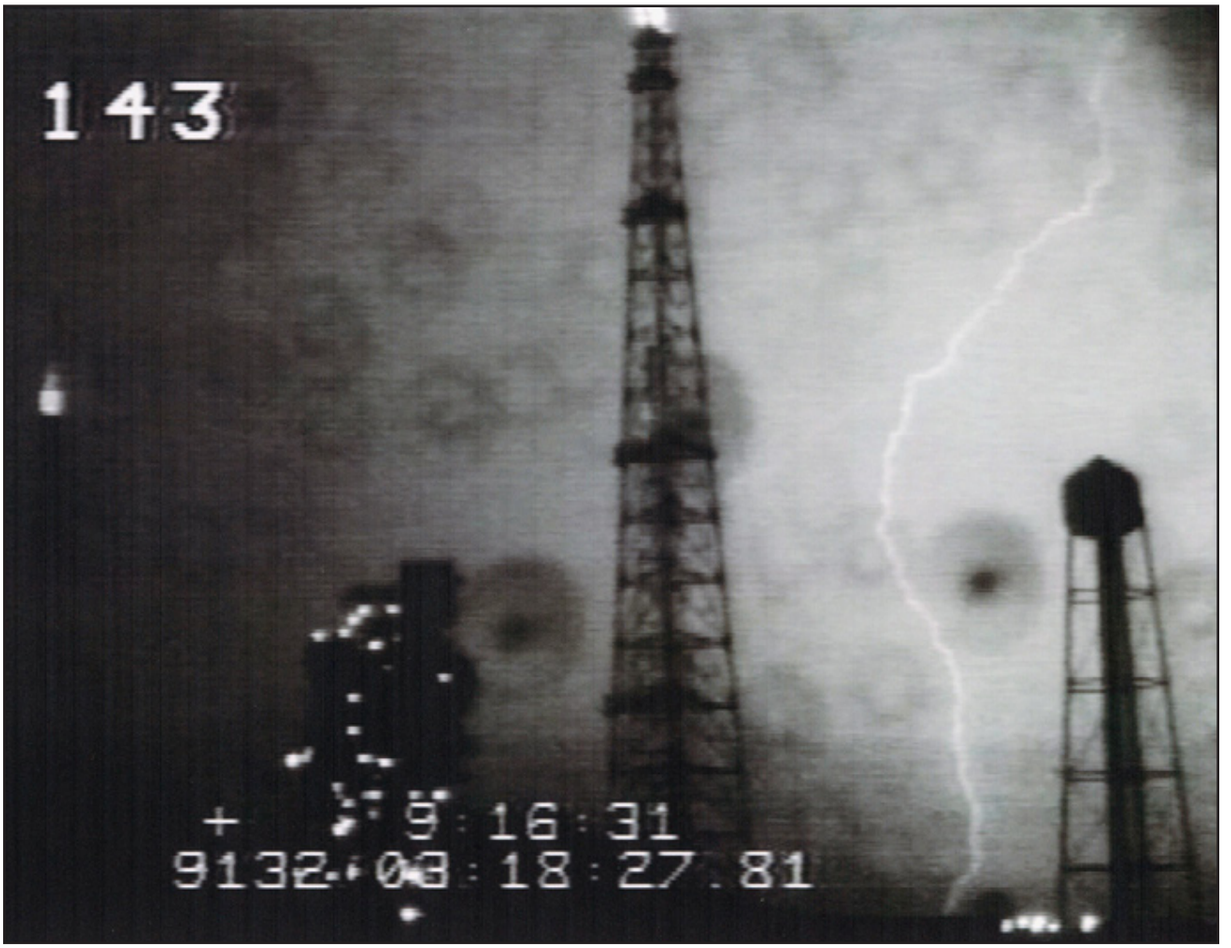
Level No. 1 -- schedule outdoor activities to avoid the lightning hazard. Listen to your NOAA Weather Radio, know the local weather patterns and use local forecasts from the National Weather Service of Melbourne, Fla., at www.srh.noaa.gov/mlb.

Level No. 2 -- when outside, know when and where to go for lightning safety. Watch the skies for signs of approaching or locally developing thunderstorms. Go to a safe place early. If you hear thunder, the storm is getting close enough to be a danger -- go to a safe place immediately. The safest place from lightning is a house, office, school or store. A car, bus or truck offers good protection too. When indoors, stay away from conducting paths to the outside: corded telephones, electrical appliances, wiring and plumbing.

Level No. 3 -- when you have to be outdoors with thunderstorms in the area. This is considered dangerous and should only be done if there is no alternative. Avoid the riskiest locations and activities: elevated and wide-open areas, such as sports fields and beaches, and tall isolated objects, such as trees. Get out of, off of and away from large bodies of water. Small, open structures, such as pavilions and rain shelters do not provide lightning protection.

Level No. 4 -- first aid for lightning victims. All lightning deaths are a result of cardiac arrest or stopped breathing at the time of the lightning strike. Rescue breathing, or CPR, is the recommended first aid. Have someone call 911, or 867-7911 if on-base. If an automated external defibrillator, or AED, is available, use it on victims with cardiac arrest. If the cardiac arrest is a fibrillation condition, the AED works much better than CPR. If it is not a fibrillation, then the AED won't fire and you should resume CPR.

William R. Roeder of the 45th Weather Squadron contributed to this report.



NASA

Two lightning bolts struck about 1/3 of a mile from space shuttle Endeavour on Kennedy Space Center's Launch Pad 39B on May 11. This image was taken from Kennedy's operational television cameras.

More info

More information on lightning safety is available at www.lightning-safety.noaa.gov. For lightning safety training, contact William Roeder at the 45th Weather Squadron at william.roeder@patrick.af.mil or call (321) 853-8410.

Remembering Our Heritage: 10 years ago

Discovery first shuttle docking with ISS 10 years ago

By Kay Grinter
Reference Librarian

The International Space Station became a sign of teamwork and partnership 10 years ago when space shuttle Discovery docked to the fledgling structure using the Russian-designed Androgynous Peripheral Attach System, or APAS, on May 29, 1999.

The system evolved from a docking system engineered by Russian space technologist Vladimir Syromyatnikov whose career began in the former Soviet Union during the Cold War.

"I joined space technology when there was no space technology at all," Syromyatnikov told the Spaceport News in 1995. He entered the space race in 1956, before the first Sputnik launch.

Although Syromyatnikov started in launch vehicle design, he had become the foremost docking system designer for the Soviet space program by the time the United States and the Soviet Union agreed to a joint docking. He traveled to Houston in the 1970s to support the Apollo-Soyuz Test Project.

Later, as head of electromechanical system design for RSC Energia, Syromyatnikov modified the design of the docking system to accommodate the visits of the U.S. space shuttle to Russia's Mir space station. On June 29, 1995, during the STS-71 mission, space shuttle Atlantis docked with Mir with the assistance of the Androgynous Peripheral Docking System, as it was called. STS-71 was the historic 100th mission for the space shuttle, and the conjoined spacecraft set a record as the largest structure ever to orbit Earth.

NASA file/1999

The STS-96 crew consisted of six NASA astronauts and a Russian cosmonaut that included, from left, Daniel Barry, mission specialist; Kent Rominger, commander; Julie Payette, mission specialist representing the Canadian Space Agency; Ellen Ochoa, mission specialist; cosmonaut Valery Tokarev, mission specialist; Rick Husband, pilot; and Tamara Jernigan, mission specialist.

"Docking is really an assembly," Syromyatnikov said, explaining that in Russia the docking mechanism is even known as the Androgynous Peripheral "Assembly" System.

Four years later at the time of space shuttle Discovery's STS-96 mission, assembly of the International Space Station was just getting under way. The station was no more than the habitable U.S. Unity module attached to the Russian Zarya control module.

STS-96 mission Commander Kent Rominger's crew included Pilot Rick Husband and Mission Specialists Ellen Ochoa, Tamara Jernigan, Daniel Barry, Russian Valery Tokarev and Canadian Julie Payette, making her first spaceflight.

On May 29, Rominger eased the shuttle's APAS to a textbook linkup with one of two pressurized mating adapters on Unity as the shuttle and station flew over the Russian Kazakh border -- but docking had been a team effort.

As Discovery moved to within about a half-mile of the station, Rominger took over manual control of the shuttle's approach, flying to a point about 500 feet directly below the station, from which he began a half-circle of the station. During the rendezvous, Rominger was assisted by Husband in controlling Discovery's approach.

Jernigan and Ochoa also played key roles in the rendezvous, with Jernigan operating the shuttle's docking mechanism and Ochoa assisting with the rendezvous navigation.

Rominger flew Discovery to a point about 250 feet directly above the station, stopped Discovery and then slowly descended to a point about 170 feet away. He then held Discovery's position for about a half an hour to allow the station to move within range of Russian communications stations. Jernigan used this time to power up the docking mechanism and prepare it for contact and capture with the station.

For the docking, Rominger maintained the shuttle's speed relative to the station at about one-tenth of a foot per second, and kept the docking mechanisms aligned to within three inches of one another.

When Discovery made contact with the station, latches automatically attached the two spacecraft. Shock absorber-type springs in the docking mechanism dampened any relative motion between the two.

Once relative motion between the spacecraft had been stopped, Jernigan commanded the docking ring on Discovery's mechanism to retract and close latches to firmly secure the shuttle to the station. Then, the shuttle's steering jets were reactivated to control both spacecraft for the duration of the docked operations of five days, 18 hours.

The mission's primary tasks went smoothly -- outfitting the station with a U.S.-built crane, the orbital transfer device, as well as parts of the Russian crane Strela.

After undocking, Payette deployed the Starshine satellite from the shuttle's cargo bay. The small probe instantly became visible from Earth as part of a project allowing students from 18 countries to track its progress.

As Payette prepares for her second trip to the station aboard space shuttle Endeavour as a member of the STS-127 crew, the station is 81 percent complete by mass, an accomplishment that would not have been possible without the involvement and teamwork of our international partners.

NASA file/1999

The International Space Station is seen during a fly-around following separation with space shuttle Discovery. The STS-96 flight carried the Spacehab module in the payload and was the first to perform docking with the orbiting complex.

Kennedy Space Center Spirit Day set for June 26

The External Relations Education Office is sponsoring Kennedy Space Center Spirit Day on June 26.

Kennedy workers are encouraged to wear their alma mater colors, logo or jersey.

Join the fun and see which of your coworkers belongs to your school family . . . maybe you'll find out they belong to "that other school."

For more information, e-mail Helen Kane at **Helen.P.Kane@nasa.gov.**

WORD ON THE STREET

LRO and LCROSS are going to the moon on a mission targeted to launch June 17. Do you think the spacecraft will find potential resources to sustain human life, such as ice?

"I hope they do. If we're going to put a habitat up there, it would be nice to find water."

Steve Barry, with NASA

"Yes, I do. I think they'll find ice based on history and recent lunar findings."

David Ouellette, with Lockheed Martin Corp.

"No, but I think they will find things that will create ice and water . . . I hope."

Don Hall, with ASRC Aerospace Corp.

"Yes, because comets transport ice around the galaxy, and I'm sure the moon has been struck."

Luke Catella, with NASA

Looking up and ahead

June 12	KSC BEST BBQ, KARS Park I (Area 2) 3-6 p.m. EDT
June 13	Launch/KSC: Endeavour, STS-127; 7:17 a.m. EDT
Planned for June 29	Landing/KSC Shuttle Landing Facility: 12:18 a.m. EDT
June 17	Launch/CCAFS: Atlas V, LRO/LCROSS; 3:22 p.m. EDT
No earlier than June 26	Launch/CCAFS: Delta IV, GOES-O; 6:14 p.m. EDT
July	Launch/CCAFS: Falcon 9; TBD
Target Aug. 7	Launch/KSC: Discovery, STS-128; 8:49 a.m. EDT
No earlier than Aug. 17	Launch/CCAFS: Delta II, STSS Demo; TBD
No earlier than Aug. 21	Launch/CCAFS: Delta II, GPS IIR-21; TBD
No earlier than Aug. 28	Launch/CCAFS: Delta IV, WGS SV-3; TBD
No earlier than Aug. 30	Launch/KSC: Ares I-X flight test/7 a.m. EDT
September	Launch/CCAFS: Atlas V, Commercial Payload; TBD
No earlier than Oct. 19	Launch/CCAFS: Atlas V, SDO; TBD
No earlier than Nov. 1	Launch/CCAFS: WISE; TBD
Target Nov. 12	Launch/KSC: Atlantis, STS-129; 4:22 p.m.
No earlier than Nov. 12	Launch/CCAFS: Delta IV, GOES-P; TBD
Late November/Early December	Launch/CCAFS: Delta IV, GPS IIF-1; TBD
No earlier than Jan. 23, 2010	Launch/VAFB: Taurus, Glory; TBD
Target Feb.4, 2010	Launch/KSC: Endeavour, STS-130; 6:20 a.m.
Target March 18, 2010	Launch/KSC: Discovery, STS-131; 1:08 p.m.
Target May 14, 2010	Launch/KSC: Atlantis, STS-132; 3:05 p.m.
Target July 29, 2010	Launch/KSC: Endeavour, STS-133; 8:45 a.m.
Target Sept. 16, 2010	Launch/KSC: Discovery, STS-134; 1 p.m.
Targeted for Fall 2011	Launch/CCAFS: Atlas V, Mars Science Laboratory; TBD

John F. Kennedy Space Center

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